CLAIMS

What is claimed is:

1   1.   A method for de-screening a halftone image, comprising:

2   performing a screen conversion filter upon a scanned

3   representation of said halftone image to produce an

4   intermediate image; and

5   performing a line smoothing filter upon said intermediate image

6   to produce an output image.

1   2.   The method of claim 1, wherein said screen conversion

2   filter utilizes a 3 by 3 coefficient matrix.

1   3.   The method of claim 2, wherein said coefficient matrix is

2   diagonal along the lower right to upper left direction.

1   4.   The method of claim 3, wherein coefficients $c_{(-1, 1)} = c_{(1, -1)} =$

2   1, and coefficient $c_{(0, 0)} = 2$.

1   5.   The method of claim 2, wherein said coefficient matrix is

2   diagonal along the lower left to upper right direction.

1   6.   The method of claim 3, wherein coefficients $c_{(-1, -1)} = c_{(1, 1)} =$

2   1, and coefficient $c_{(0, 0)} = 2$.

1   7.   The method of claim 1, wherein said line smoothing filter

2   utilizes a 3 by 3 coefficient matrix.

1   8.   The method of claim 7, wherein said coefficient matrix is

2   diagonal along the lower right to upper left direction.

1   9.   The method of claim 8, wherein coefficients $c_{(-1, 1)} = c_{(1, -1)} =$

2   1, and coefficient $c_{(0, 0)} = 2$.

1   10.   The method of claim 9, wherein said coefficient matrix is

2   diagonal along the lower left to upper right direction.

1   11.   The method of claim 10, wherein coefficients $c_{(-1, -1)} = c_{(1, 1)} =$

2   1, and coefficient $c_{(0, 0)} = 2$.

1   12.   The method of claim 1, wherein said screen conversion

2   filter passes low-frequencies, passes high-frequencies along a diagonal

3   line from lower left to upper right, and attenuates high-frequencies

4   away from said diagonal line.

1   13.   The method of claim 1, wherein said screen conversion

2   filter passes low-frequencies, passes high-frequencies along a diagonal

3   line from lower right to upper left, and attenuates high-frequencies

4   away from said diagonal line.

1   14.   The method of claim 1, wherein said line smoothing filter

2   passes low-frequencies, passes high-frequencies along a diagonal line

3   from lower left to upper right, and attenuates high-frequencies away

4   from said diagonal line.

1   15.   The method of claim 1, wherein said line smoothing filter

2   passes low-frequencies, passes high-frequencies along a diagonal line

3   from lower right to upper left, and attenuates high-frequencies away

4   from said diagonal line.

1   16.   A method for de-screening a halftone image, comprising:

2   performing a single convolution filter upon a scanned

3   representation of said halftone image to produce an

4   output image, wherein said single convolution filter equals

5   the resulting convolution of a screen conversion filter and a

6   line smoothing filter.

1   17.   The method of claim 16, wherein said single convolution

2   filter passes low-frequencies, passes high-frequencies at a central area,

3   and attenuates high-frequencies along a horizontal axis and a vertical

4   axis.

1   18.   A computer-readable medium having stored thereon

2   sequences of instructions, the sequences of instructions including

3   instructions which, when executed by a processor, causes the processor

4   to perform various processing, the sequences of instructions

5   comprising:

6   a first sequence to perform a screen conversion filter upon a

7   scanned representation of a halftone image to produce an intermediate

8   image; and

9   a second sequence to perform a line smoothing filter upon said

10   intermediate image to produce an output image.

1   19.   A computer-readable medium having stored thereon

2   sequences of instructions, the sequences of instructions including

3   instructions which, when executed by a processor, causes the processor

4   to perform various processing, the sequences of instructions

5   comprising:

6 a first sequence to perform a single convolution filter upon a

7 scanned representation of a halftone image to produce an output image,

8 wherein said single convolution filter equals the resulting convolution of

9 a screen conversion filter and a line smoothing filter.

1 20. A system for de-screening a halftone image, comprising:

2 a memory to store an input image from a halftone print; and

3 a processor to perform a screen conversion filter upon said input

4   image and create an intermediate image, and to perform a

5   line smoothing filter upon said intermediate image and

6   create an output image.

1 21. A method for de-screening a halftone image, comprising:

2 converting dots of said halftone image into parallel lines of an

3   intermediate image; and

4 smoothing said parallel lines of said intermediate image into a

5   final image.

1 22. The method of claim 21, wherein said parallel lines are at

2 an approximately 45 degree angle with respect to a side of said

3 intermediate image.